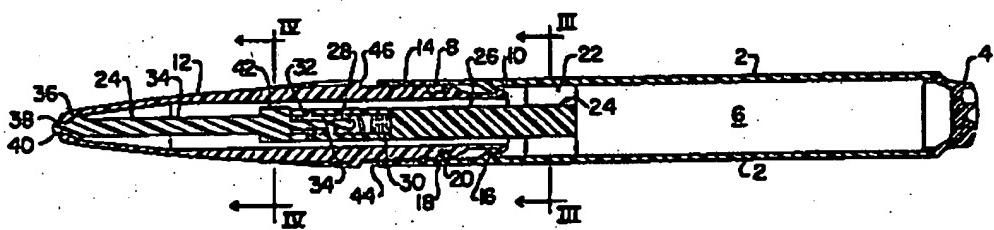




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<p>Published <i>With international search report.</i></p>		

(54) Title: CORRECTION FLUID DISPENSER



(57) Abstract

A correction fluid dispenser comprising a body member (2) adapted to retain correction fluid, a barrel member (12) received by the body member (2), a core portion (24) extending axially of the body (2) and barrel (12) members, and tip seal member (34) disposed in a recess (28) in the core portion (24) and spring biased toward an orifice (38) in the barrel member (12) to block the orifice (38) and prevent flow of fluid therethrough when not in use. The tip seal member (34) being retractable against the spring bias to permit fluid flow through the orifice (38) when in use. The above arrangement requires a strong spring bias to block the orifice (38) when not in use. However, the strong spring bias is difficult to overcome when in use. Inadvertent actuation could also occur with the above structure. The solution to the above problem is to enable the body (2) and barrel (12) members to move the core portion (24) relative to the tip seal member (34) until contact, and thereby the tip seal member (34), into the orifice (38) in blocking, non-retractable position.

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CORRECTION FLUID DISPENSER

This invention relates to fluid dispensers and is directed more particularly to a correction fluid dispenser for correcting typewriter mistakes.

Correction of typing errors is frequently accomplished by an operator dabbing onto the typed page a white liquid substance by means of a brush taken from a bottle of the substance. Upon drying of the substance over the typing error, the correct typing entry is made on the dried layer of white substance, or correction fluid.

10 Correction fluid dispensers, of a pencil or pen type, have been used, but generally unsatisfactorily. Such devices usually have internally a spring-biased plunger which closes the discharge orifice of the device to prevent drying of the correction fluid reservoir. Pressure applied 15 to the point of the device operates to push the plunger back into the device and clear of the discharge orifice to permit flow of correction fluid therethrough. A problem that has persisted lies in the fact that a forceful spring bias is required to maintain the plunger in an orifice-blocking position tight and secure enough to prevent drying of the fluid. On the other hand, for proper functioning of the device, it is important that the orifice be cleared by very light pressure upon the point. The latter is a desirable feature because it often happens that the only backing, or 25 support, for the paper during a correction operation is the hand of the operator.

Thus, constructions given to security of the fluid are usually too difficult to operate, while those that are

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easy to operate suffer from drying of the fluid reservoir.

It is, therefore, an object of the present invention to provide a correction fluid dispenser having a secure seal at the orifice during periods of non-use and an easily opened orifice during periods of use.

- 5 With the above and other objects in view, as will hereinafter appear, a feature of the present invention is the provision of a correction fluid dispenser comprising a body member adapted to retain correction fluid, a barrel member received by the body member, a core portion extending 10 axially of the body and barrel members, and a tip seal member disposed in a recess in the core portion and spring biased toward an orifice in the barrel member to block the orifice and prevent flow of fluid therethrough, the tip seal member being retractable against the spring bias to permit 15 fluid flow through the orifice, the body and barrel members being operable to move the core portion, and thereby the tip seal member, into the orifice in blocking, non-retractable position.

- The above and other features of the invention, 20 including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be understood that the particular device embodying the invention is shown by way of illustration 25 only and not as a limitation of the invention. The principles and features of this invention may be employed in various and numerous embodiments without departing from the scope of the invention.

- Reference is made to the accompanying drawings in 30 which are shown illustrative embodiments of the invention from which its novel features and advantages will be apparent.

In the drawings:

Fig. 1 is a centerline sectional view of one form of dispenser illustrative of an embodiment of the invention;

- 35 Fig. 2 is a sectional view, similar to Fig. 1, but showing the parts in a different position;

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Fig. 3 is a sectional view of the device, taken along line III-III of Fig. 1;

Fig. 4 is a sectional view taken along line IV-IV of Fig. 1;

5 Fig. 5 is a centerline sectional view of another form of dispenser illustrative of an embodiment of the invention;

Fig. 6 is a sectional view similar to Fig. 5 but showing the parts in a different position;

10 Fig. 7 is a sectional view of the device taken along line VII-VII of Fig. 6; and

Fig. 8 is a sectional view taken along line VIII-VIII of Fig. 5.

Referring to Fig. 1, it will be seen that an 15 illustrative example of the invention includes a tubular body member 2 closed at one end by a cap member 4 and adapted to provide a reservoir 6 for correction fluid.

Near the end of the body member 2 removed from the cap member 4 the body member is provided with an internal 20 first connector means, which in the illustrative example is in the form of screw threads 8. The body member 2 is also provided with inwardly-extending shoulder means 10.

The device further includes a barrel member 12, which is generally conically-shaped in a forward portion 25 thereof, with the remainder thereof generally tubular. The barrel member 12 is provided with a second connector means, illustrated in the form of external threads 14, threadedly engaged with the body member internal threads 8. The barrel member 12 is accordingly in part disposed within the body 30 member 2 and is provided with outwardly directed flange means 16 engageable with the shoulder means 10.

The barrel member 12 further may be provided with an O-ring 18 disposed in a circular recess 20, the O-ring abutting the interior of the body member 2.

35 Disposed in the interior of the body member 2, by way of internal struts 22 is an elongated axially disposed core portion 24 which extends centrally of the body and barrel

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members 2, 12.

The core portion 24 includes a base portion 26 which is provided with an axial recess 28 in which is disposed a spring means, preferably a coil spring 30. The base 5 portion 26 of the core portion 24, in the area of the recess 28, is provided with a pair of open-ended slots 32.

The core portion 24 further includes a tip seal member 34, a first end of which comprises a seal portion 36 adapted to block an orifice 38 in the barrel member 12, and 10 a tip portion 40 which extends into and through the orifice. A second end of the tip seal member 34 extends into the recess 28. The tip seal member is provided with wing portions 42, extending from either side of the member 34 which ride in the slots 32 and receive one end of the coil 15 spring 30, the spring thus urging the tip seal member toward the orifice 38.

In operation, the interior of the body and barrel members 2, 12 may be filled with correction fluid, the O-ring 18 preventing leakage at the juncture of the body and barrel 20 members, and the tip seal member 34 and spring 30 preventing leakage at the orifice 38.

In the position shown in Fig. 1, the body and barrel members 2, 12 have been threadedly moved to a first position in which the shoulder and flange means 10, 16 are 25 engaged and the open end 44 of the body member 2 is separated from an annular shoulder 46 on the barrel member 12. In such position, the tip seal is urged by the spring 30 to a position in which the orifice 38 is blocked by the tip portion 40 and seal portion 36 of the tip seal member, but 30 is retractable against the bias of the spring to open the orifice 38 to permit flow of fluid therethrough.

When correction is desired, the body and barrel members are rotated to the position shown in Fig. 1, and the tip portion is pressed against the surface on which the 35 correction is to be made. The spring 30 is of relatively weak force, permitting ready retraction of the tip seal member 34.



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After use, the body and barrel members are rotatively moved to the position shown in Fig. 2, wherein the shoulder and flange means 10, 16 are separated and the open end 44 of the body member 2 is proximate the annular 5 shoulder 46 of the barrel member 12.

In the second position, shown in Fig. 2, the closed ends of the slots 32 engage the wing portions 42 on the tip seal member 34, forcing the tip portion 40 and the seal portion 36 into blocking position in and around the 10 orifice 38, to prevent entry of air into the device. In the second position, the tip seal member is firmly engaged with the orifice 38 and is non-retractable.

Referring to Figs. 5-8, there is illustrated another embodiment of the invention in which the axial 15 movement of seal portion 36 is brought about by the cooperation of a pair of radially projecting pins coacting with cam slots as will be hereinafter described.

In the embodiment illustrated in Figs. 5-8, core portion 24 is rotationally fixed with respect to tubular 20 body member 2 by the coaction of wing portions 50 and key ways 52 formed by ribs 48.

In the position shown in Fig. 5, the body and barrel members 2, 12 have been rotated to a relative position in which the tip seal is urged by the spring 30 to 25 a position in which the orifice 38 is blocked by the tip portion 40 and seal portion 36 of the tip seal member, but is retractable against the bias of the spring to open the orifice 38 to permit flow of fluid therethrough.

When correction is desired, the body and barrel 30 members are rotated to the position shown in Fig. 5, and the tip portion is pressed against the surface on which the correction is to be made. The spring 30 is of relatively weak force, permitting ready retraction of the tip seal member 34.

35 After use, the body and barrel members are rotatively moved in a clockwise direction to the position shown in Fig. 6. During rotation, radially projecting pins



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54, mounted upon pin bases 58, bear upon the walls of angled cam slots 56 to convert the rotational movement of barrel member 12 to forwardly axial movement of core portion 24. Relative rotation between core portion 24 5 and body member 2 is prevented by the coaction of wing portions 50 and key ways 52 formed by ribs 48.

In the second position shown in Fig. 6, the closed ends of slot 32 engage the wing portions 42 on the tip seal member 34 forcing the tip portion 40 and 10 the seal portion 36 into blocking position in and around the orifice 38, to prevent entry of air into the device. In the second position, the tip seal member is firmly engaged with the orifice 38 and is non-retractable.

The axial force required to overcome the biasing 15 action of spring means 30 can be controlled by the choice of spring which is employed. Where it is intended to use the correction fluid dispenser of this invention in correcting mistakes made during the typing process, I prefer to employ a spring, the biasing force of which can be 20 overcome by the application of an axially directed force against tip portion 40 of about two to five grams. By using a spring having such characteristics, corrections may be made upon surfaces which are relatively unsupported such as the portion of a sheet of paper in a typewriter 25 immediately above the platen. Where corrections are to be made on material which is fully supported, such as lying flat on a desk top, there may be employed springs requiring substantially more than two to five grams of force to overcome their biasing force.

30 Since the correction fluid composition employed in conjunction with the dispenser of this invention will come in contact with the various parts, it is important that materials of construction be chosen to minimize chemical or solvent interactions. This is especially 35 important when organic solvent-based correction fluids are to be employed in a dispenser assembled from plastic parts. Where it is intended, for example, to employ correction



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fluids containing trichloroethane or trichloroethylene, all of the parts are preferably made from one or more of the various moldable nylon polymers. To minimize chemical reaction with the material of spring 30, I prefer that it 5 be made from stainless steel.

It is to be understood that the present invention is by no means limited to the particular construction herein disclosed and/or shown in the drawings, but also comprises any modifications or equivalents within the 10 scope of the disclosure.



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C L A I M S

1. A correction fluid dispenser characterized by comprising a body member (2) adapted to retain a correction fluid, a barrel member (12) engaged with said body member (2), a core portion (24) extending axially of said body member (2) and said barrel member (12), and a tip seal member (34) engaged with said core portion (24) and biased toward an orifice (38) in said barrel member (12) to retractably block said orifice (38) to prevent flow of said fluid therethrough, said tip seal member (34) being retractable against said bias to permit flow of said fluid through said orifice (38), said body (2) and barrel (12) members being operable to move said core portion (24).
2. A correction fluid dispenser as described in claim 1, characterized in that said body (2) and barrel (12) members are operable to move said core portion (24), and thereby said tip seal member (34), into said orifice (38) in non-retractable, blocking position.
3. A correction fluid dispenser as described in claim 1 or 2, characterized in that said barrel (12) and body (2) members are engaged by means of a set of cooperating threads (8,14).
4. A correction fluid dispenser as described in any one of claims 1-3, characterized in that the movement of said core portion (24), results from the engagement or disengagement of a set of cooperating threads (8,14) on said barrel (12) and body (2) members.
5. A correction fluid dispenser as described in any one of the preceding claims, characterized in that said barrel (12) and body (2) members are engaged by means of cooperating shoulder (10) and flange (16) means.
6. A correction fluid dispenser as described in claim 1 or 2, characterized in that the movement of said core portion (24) results from the engagement of cooperating cam slot means (56) and pin means (54).
7. A correction fluid dispenser as described in any one of the preceding claims, characterized in that the force necessary to retract said tip seal member (34) against said bias is two to five grams.



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8. A correction fluid dispenser as described in any one of the preceding claims, characterized in that said body (2) and barrel (12) members are made from a moldable nylon polymer.

9. A correction fluid dispenser according to claim 1, characterized by comprising a body member (2) adapted to retain a correction fluid, a barrel member (12) engaged by means of cooperating shoulder (10) and flange (16) means with said body member (2), a core portion (24) extending axially of said body member (2) and said barrel member (12), and a tip seal member (34) engaged with said core portion (24) and spring biased toward an orifice (38) in said barrel member (12) to retractably block said orifice (38) to prevent flow of said fluid therethrough, said tip seal member (34) being retractable against said spring bias by the application of a force of two to five grams to permit flow of said fluid through said orifice (38), said body (2) and barrel (12) members having cooperating cam slot means (56) and pin means (54) to move said core portion (24), and thereby said tip seal member (34), into said orifice (38) in non-retractable blocking position, said dispenser being constructed of a moldable nylon polymer and containing an organic solvent-based correction fluid.

10. A correction fluid dispenser according to claim 1, characterized by comprising a body member (2) adapted to retain correction fluid and having first connector means (8) therein, shoulder means (10) extending inwardly of said body member (2), a core portion (24) disposed in said body member (2) and extending axially thereof, a barrel member (12) having an orifice (38) at a first end and having second connector means (14) thereon engaged with said first connector means (8), flange means (16) extending outwardly from said barrel member (12) and engageable with said shoulder means (10), said body (2) and barrel (12) members being movable to a first position in which said shoulder means (10) engages said flange means (16), said core portion (24) extending axially of said barrel member (12), a tip seal member (34) disposed in an axial recess



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(28) in said core portion (24), and spring means (30) in said recess (28) in engagement with said tip seal member (34), said tip seal member (34) having a seal portion (36) adapted to block said orifice (38), said tip seal member (34) being movable in said recess (28) against the bias of said spring means (30) when said body (2) and barrel (12) members are in said first position to remove said seal portion (36) from said orifice (38) to permit flow of fluid therethrough, said body (2) and barrel (12) members being movable to a second position in which said shoulder means (10) are removed from said flange means (16), to place said seal portion (36) in said orifice (38) in a non-retractable blocking position.

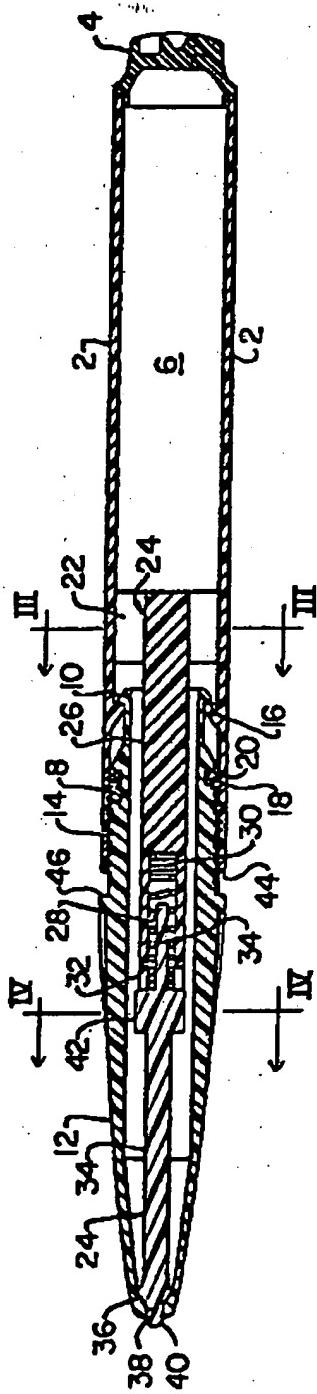
11. A correction fluid dispenser according to claim 1, characterized by comprising a tubular body member (2) adapted to retain a correction fluid and having internal threads (8) at one end thereof, inwardly directed shoulder means (10) disposed on an internal surface of said body member (2), a core portion (24) fixed to said body member (2) and extending axially thereof, a hollow barrel member (12) having external threads (14) thereon engaged with said body member internal threads (8), outwardly directed flange means (16) extending from said barrel member (12), said body (2) and barrel (12) members being movable to a first position in which said shoulder means (10) engage said flange means (16), said core portion (24) extending axially of said barrel member (12), an axial recess (28) disposed in said core portion (24), a tip seal member (34) disposed in said axial recess (28), a spring means (30) disposed in said recess (28) to urge said tip seal member (34) toward a free end of said barrel member (12), said barrel member (12) having an orifice (38) in said free end, and said tip seal member (34) having a seal portion (36) adapted to block said orifice (38) to prevent flow of said fluid therethrough, said tip seal portion (34) being movable in said recess (28) against the bias of said spring means (30) to remove said seal portion (36) from

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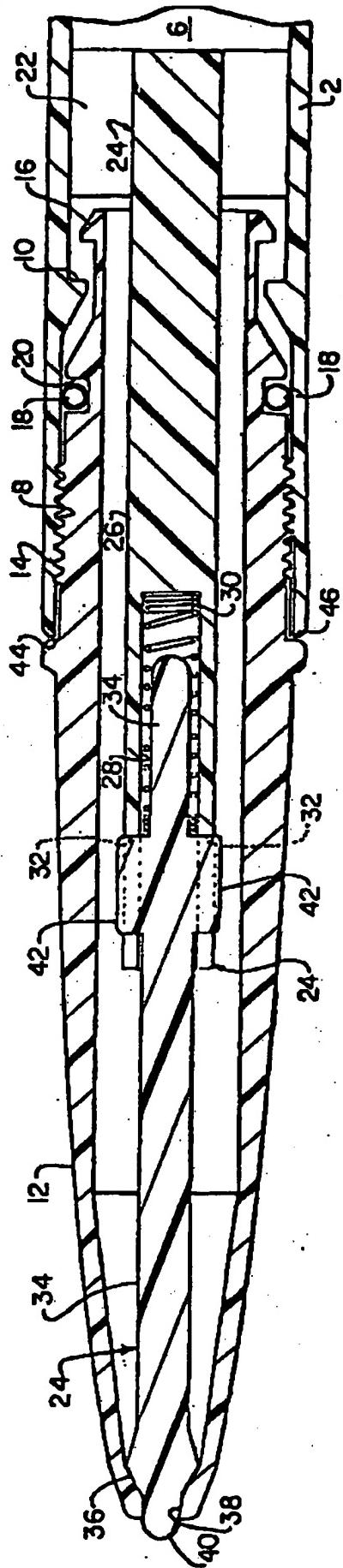
said orifice (38) to permit flow of said fluid therethrough,
said body (2) and barrel (12) members being threadedly
movable to a second position in which said shoulder means
(10) are removed from said flange means (16), to place
said seal portion (36) in non-retractable sealing position
in said orifice (38).



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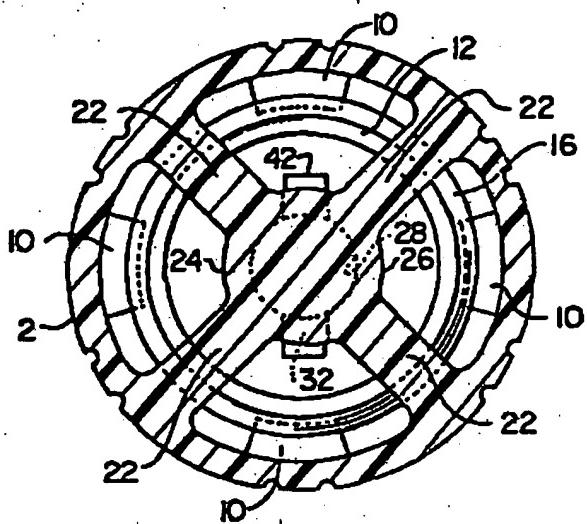


FIG. 3

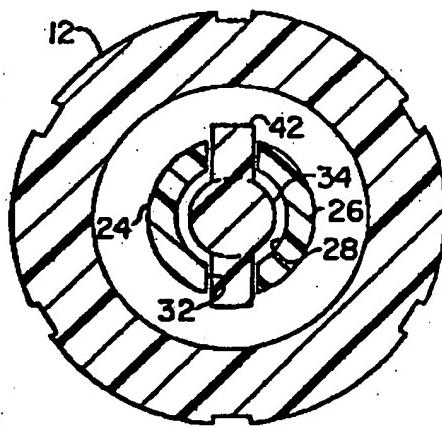
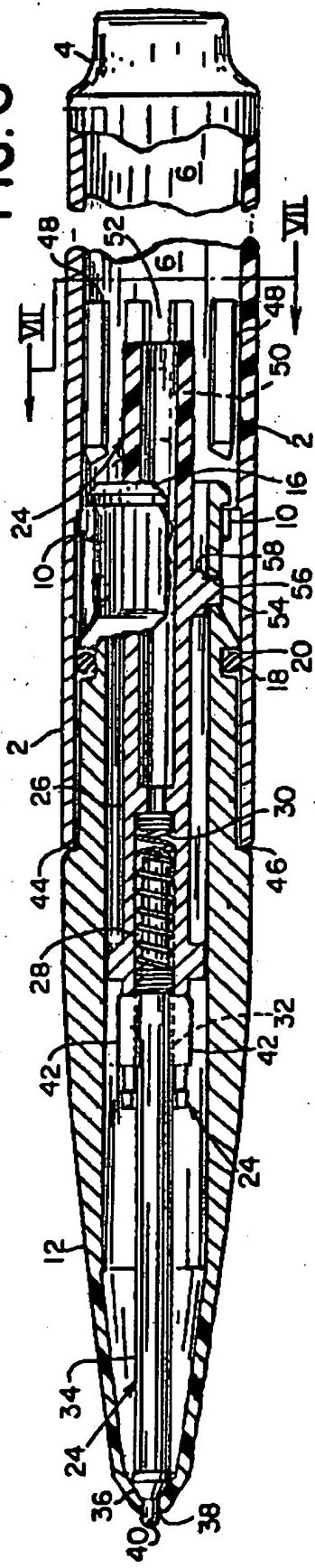


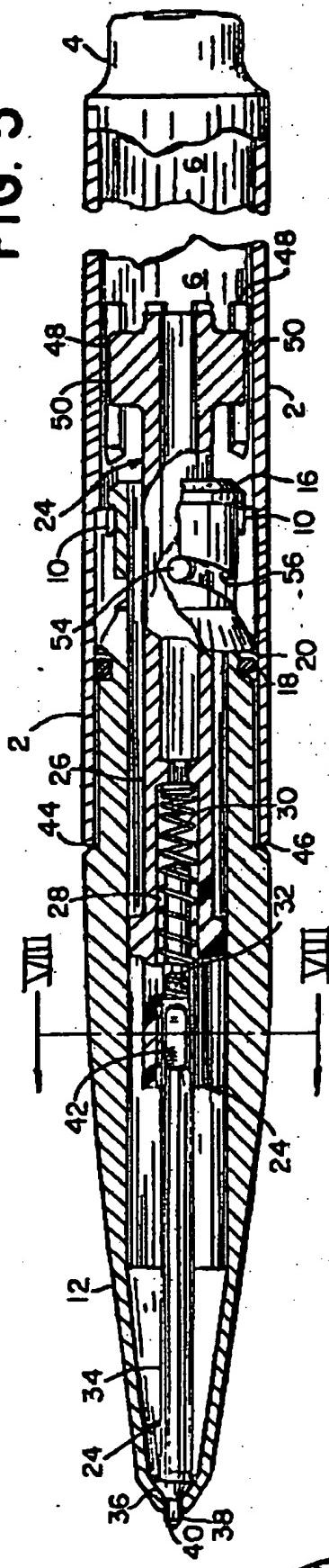
FIG. 4

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FIG.



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FIG. 7

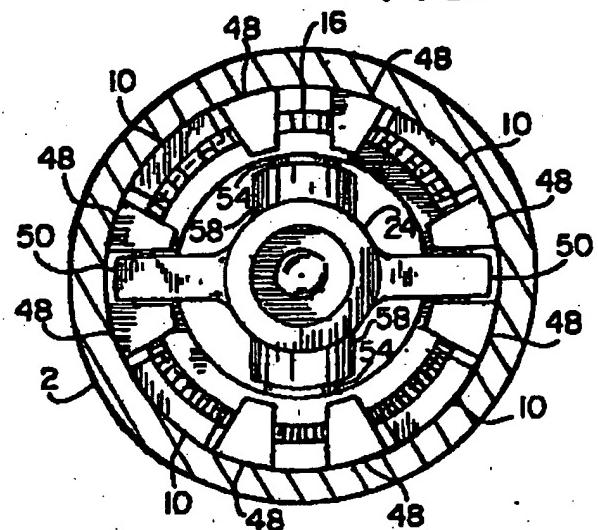
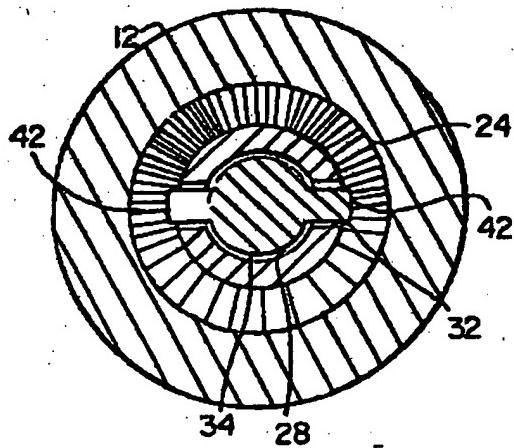


FIG. 8



INTERNATIONAL SEARCH REPORT

International Application No. PCT/US82/31528

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)

According to International Patent Classification (IPC) or to both National Classification and IPC

INT. CL. 3 B43K 5/16, 24/00

U.S. CL. 401/260, 264

II. FIELDS SEARCHED

Minimum Documentation Searched¹⁴

Classification System	Classification Symbols
US	401/116, 206, 258, 259, 260, 261, 263, 264, 273, 277
<small>Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched¹⁵</small>	

III. DOCUMENTS CONSIDERED TO BE RELEVANT¹⁶

Category ¹⁷	Citation of Document, ¹⁸ with indication, where appropriate, of the relevant passages ¹⁹	Relevant to claim No. ¹⁸
Y	US, A, 3,561,881, Published 09 February 1971 Book	1-11
Y	GB, A, 806,296, Published 23 December 1958	3,4,5,10,11
Y	CA, A, 477,244, Published 25 September 1951	6,9
Y	GB, A, 746,815, Published 21 March 1956	7,9
Y	US, A, 244,194, Published 12 July 1881 Cross	1-11
Y	DE, C, 759,950 Published 31 August 1953	1-11
Y	US, A, 2,149,711, Published 07 March 1939 Stock	1-11
Y	GB, A, 322,317, Published 05 December 1929	1-11
A	US, A, 3,832,071 Published 27 August 1974 Chaney	1-11
A	US, A, 3,902,815 Published 02 September 1975 Williams	1-11

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- "P" document published prior to the International filing date but later than the priority date claimed

"T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search²⁰:

14 February 1983

Date of Mailing of this International Search Report:

24 FEB 1983

International Searching Authority²¹:

ISA/US

Signature of Authorized Officer²²:

Steven A. Bratlie